

## **REMARKS**

### **Objections to the Drawings**

The replacement drawings were objected to for Figure 4 failing to show the claim 1 limitations. The drawings were objected to for the specification referring to two drawings with different reference numerals as "a second embodiment".

The Applicant submits replacement drawings and modifications to the specification in order to rectify any possible non-compliant issues.

### **Objections to the Specification**

The Specification was objected to for two errors in wording. The specification has been appropriately amended to remove any objectionable wording.

### **Claims Rejected under 35 USC 112, First Paragraph**

Claims 1, 36-49, & 66-69 were rejected under 35 USC 112, first paragraph as failing to comply with the enablement requirement. The Examiner correctly points out a typographical error in claim 1 wherein centre angle is referred to as centre engine. The Applicant has corrected this error. The remaining rejections will be addressed with regard to the individual subparagraph designations identified by the Examiner in paragraph 6 of the December 11<sup>th</sup> office action.

a) The Applicant respectfully traverses this rejection. The definition of center angle as comprised in claim 1 is correct and supported by the specification, i.e. *a center angle  $\beta$  is defined between the center joint plane E and the line through the joint center M and the turning point T*. This is clear from Figures 5, 7 and 8 of the application document. The Examiner is correct in that the definition of the center angle in claim 1 does not appear to fit together with the text passage of paragraph [37] of the specification. This is because paragraph [37] is referring to the service life angle (as opposed to the center angle defined in claim 1). The Applicant has respectfully clarified this apparent discrepancy by properly denoting the angle  $\beta$  in paragraph [37] and in corresponding Figures 2a and 4a into the proper service life angle  $\beta_{sl}$  in order to clarify the issue. It can be seen in Figure 2a, the legs of the service life angle  $\beta_{sl}$  are formed

between the central joint plane E and rays through the joint center M and the ball center, when shaft 22 is articulated relative to the outer joint part 12 at the maximum service life angle  $\beta_{sl}$ . Paragraphs [0038] and [0045] have been amended to bring into compliance with this clarification. Reconsideration is formally requested.

b) The Examiner identifies issues with the limitations of claims 36 & 37 and asserts that the limitations have no explanation or suggestion in the specification to provide such structure or why it is necessary. The Applicant respectfully traverses this rejection and seeks reconsideration. The Applicant respectfully calls the Examiner's attention to the previous office action wherein full support for these claim limitations was supplied to the patent office (referring to paragraph [23] of the specification as filed). As previously presented, the claimed ranges for the center angle  $\beta$  are specifically advantages because within these ranges the joint functions as a counter track joint, with the forces acting on the cage compensating each other so that the cage remains axially balanced. This is described for example in paragraph [0007], last four lines, and paragraph [0037] of the application text. To achieve this purpose it is proposed according to claim 1 that the center angle is greater than 4 degrees. However, more specifically this can be also achieved by choosing the center angle  $\beta$  greater than five degrees as claimed in claim 36. By these measures, it is insured that within the service life range of operation, the joint operates as a counter track joint. With regards to the upper value for the center angle  $\beta$  being smaller than 12 degrees according to claim 37, this is advantageous in that the enveloping angles for the balls in the tracks of the inner and outer joint part are sufficiently large to ensure a high torque transmitting capacity. This is shown in Figures 6 and 17 wherein the turning point angle  $\alpha$  and the enveloping angle  $\epsilon$  are illustrated. The relation between the turning point angle and the enveloping angle is also applicable for the claimed center angle  $\beta$ , since the angles  $\alpha$  and  $\beta$  are directly related to one another, this can be taken from the formula described in Figure 5. The Applicant therefore, respectfully requests reconsideration.

c) and d) The Examiner points out that claims 39 and 40 are written as dependent on claims with mutually exclusive limitations. The Applicant has amended claims 39 and 40 to properly be dependent on claim 1. Reconsideration is therefore requested.

e) The Examiner asserts that claim 1 limitations only apply to six ball joints. This is in error and the Applicant traverses this rejection as improper. The limitations for the turning point angle  $\alpha$  being within the claimed ranges applies to each and every joint disclosed in the patent application as confirmed with the inventor. The number of ball tracks does not play a role for the design of the ball tracks and thus for the range of the turning point angle. Reference is made to Figures 13, 14, 15, 16, 18 and 19, which all show eight ball joints. The design of the different joints shown in Figures 9 and 16 is structured as follows, where the differences relate to the second pairs of tracks 520 to 1220 ONLY:

Embodiments (6 balls)		Embodiments (8 balls)
Figure 9	corresponds to	Figure 13
Figure 10	corresponds to	Figure 14
Figure 11	corresponds to	Figure 15
Figure 12	corresponds to	Figure 16

As can be taken from these Figures, the first pairs of tracks (18,19), which are referred to in claim 1, are always the same. This is also the case for the embodiments shown in Figures 17-19. Thus, the claimed ranges for the turning point angle  $\alpha$  ( $10\text{deg} < \alpha < 18\text{deg}$ ) which are described in Figure 17 apply for all embodiments. i.e. also for the joints with eight balls. It is improper to read limitations only found in the preferred embodiment into the claims unless positively recited as claimed limitations. Such is not the case with the number of balls. The Examiner is urged to reconsider these rejections.

The Examiner rejected claims 1, 36-49 and 66-69 under 35 USC 112, second paragraph, as being indefinite. The Applicant traverses this rejection and puts forth the reasoning matching the sub-paragraph numbering of paragraph 7 of the Examiner's office action.

a) The Examiner points out the limitation in claim 1 of "said center engine" is not supported. This is because it is a typographical error that has been corrected in this office action. The Applicant therefore submits the rejections of claim 1 have been overcome.

b) The Examiner states that it is unclear as to whether the radius R2 in claim 41 is the same as that recited in Claim 1. While it is clear that it is the same radius (it is claimed with regard to the identical elements) claim 41 has been amended to state "said radius (R2)" rather than "a radius (R2)". The Applicant submits that all rejections have therefore been overcome and reconsideration is requested.

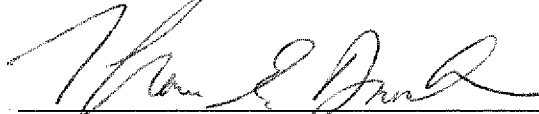
c) The Examiner states that claims 42 and 43 recite "a first radius (R2)" and that it is unclear if this is the same radius R2 recited in claim 1. They are referring to the same radius. The Applicant has amended the claims to recite "said radius (R2)" similar to the last rejection response. The Applicant submits that all rejections have therefore been overcome and reconsideration is requested.

### **Conclusion**

Having overcome all of the objections and rejections set forth in the Office Action, Applicants submit that claims 1, 36-49 and 66-69 are in a condition for allowance. A Notice of Allowance indicating the same is therefore earnestly solicited. The Examiner is invited to telephone the Applicants' undersigned attorney at (248) 377-1200 if any unresolved matters remain.

Respectfully submitted,

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